

Title: **MEPRS Tools: Six Sigma MEPRS Management Metrics (S2M3)**

Session: **M-4-1100 and M-4-1630**



Objectives

- Describe the origin and goals of Six Sigma
- Identify how Six Sigma is used in healthcare
- Understand and correctly interpret the S2M3 tool
- Understand how individual MTF characteristics can affect its position among its peer group/cohort
- Learn how to use the S2M3 to locate opportunities for implementing Six Sigma programs



Origin and Goals

Six Sigma

- *Six Sigma is a statistics based business improvement process that continually strives for perfection.*
- *It employs a disciplined methodology created from the manufacturing industry for eliminating the wastes of defects or variance to lower costs and improve customer satisfaction.*

Six Sigma Methodology for Improving Existing Processes

DMAIC

- **D**efine Opportunities
- **M**easure Performance
- **A**nalyze Opportunity
- **I**mprove Performance
- **C**ontrol Performance



Origin and Goals

Six Sigma in Healthcare:

- Using Lean Six Sigma, Morton Plant Hospital in Clearwater, Florida, improved patient satisfaction over 50%, reduced emergency department length of service by 21%, and recovered over \$4 million in cost of quality (aka rework)
- Kaiser Permanente Colorado used Lean Six Sigma to evaluate and improve Medicaid enrollment processes. A three-month project resulted in a 45% gain in Medicaid membership while increasing Medicaid revenue by more than \$1 million annually
- The Nebraska Medical Center used Six Sigma to improve the completeness and availability of physician orders for patients; the project occurred within a Six Sigma program that has returned about \$7.5 million in savings



Control Panel

Six Sigma MEPRS Management Metrics (S2M3)



FY09/FY10 Update

All data obtained from the EAS IV Repository and M2 on October 1, 2010



Click on a peer group below to view a specific metric:

Rx Dispensing Costs	Available FTE's per Daily Occupied Bed	Ratio of Support Personnel to Provider FTEs	Rx Workload per Rx FTE	Lab Workload per Lab FTE	Rad Workload per Rad FTE	Inpatient Costs per RWP	Ambulatory Costs per APG
Medical Centers	Medical Centers	Medical Centers	Medical Centers	Medical Centers	Medical Centers	Medical Centers	Medical Centers
Large Hospitals	Large Hospitals	Large Hospitals	Large Hospitals	Large Hospitals	Large Hospitals	Large Hospitals	Large Hospitals
Small Hospitals	Small Hospitals	Small Hospitals	Small Hospitals	Small Hospitals	Small Hospitals	Small Hospitals	Small Hospitals
Large Clinics	Large Hospitals OCONUS	Large Clinics	Large Clinics	Large Clinics	Large Clinics	Large Hospitals OCONUS	Large Clinics
Small Clinics	Small Hospitals OCONUS	Small Clinics	Small Clinics	Small Clinics	Small Clinics	Small Hospitals OCONUS	Small Clinics
Large Hospitals OCONUS		Large Hospitals OCONUS	Large Hospitals OCONUS	Large Hospitals OCONUS	Large Hospitals OCONUS		Large Hospitals OCONUS
Small Hospitals OCONUS		Small Hospitals OCONUS	Small Hospitals OCONUS	Small Hospitals OCONUS	Small Hospitals OCONUS		Small Hospitals OCONUS
Clinics OCONUS		Clinics OCONUS	Clinics OCONUS	Clinics OCONUS	Clinics OCONUS		Clinics OCONUS

Executive Summary:

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Notes:

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[Data Sources](#)
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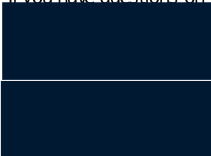
External MEPRS Resources:

[MEPRS Web Portal](#)
[MEWACS](#)
[MEPRS Manual DoD 6010.13-M](#)
[Human System Interface \(HSI\)](#)

MTF-Peer Group Lookup:

[Air Force](#)
[Army](#)
[Navy](#)

If you have questions on the data contained, please contact:





Control Panel - S2M3 User Notes

Definition of Metrics

The metrics contained in this package offer a snap shot of the Direct Care operation at MTFs, including staffing, financial, and workload metrics. By arraying the data in peer groups, MTFs can see their position relative to similar facilities. Rankings and sorting of facilities are done based on Z-Scores (standard deviations from the peer group mean: $[(MTF \text{ ratio} - \text{peer group mean ratio}) / \text{peer group ratio standard deviation}]$).

Rx Dispensing Costs: This metric evaluates the cost of dispensing prescriptions, without ingredient costs. Cost data include pharmacy expenses allocated to ambulatory Functional Cost Codes (FCCs) less pharmaceutical supply costs (ingredient costs). In this metric, Raw pharmacy workload across ambulatory functional cost codes (B*** and FBN*) is used as a proxy for individual prescriptions. Non-ingredient costs are defined as all pharmacy expenses (DA**) stepped down to the ambulatory FCCs (B*** and FBN*) except those expenses in SEEC 26.25 (Pharm Supplies) and any non-labor expenses in PECs 87701 (Pharmaceuticals in Medical Center - CONUS) and 87901 (Pharmaceuticals in Medical Center - OCONUS). Dispensing cost per prescription is calculated as $[(\text{Non-ingredient Pharmacy Costs}) / \text{Raw Pharmacy Workload}]$.



Control Panel - Peer Groups

Six Sigma MEPRS Management and Control Metrics

2010 MTF- Peer Group Look-up by Service

Air Force

Parent DMS ID	Parent DMS ID Name	Peer
0004	42ND MEDICAL GROUP-MAXWELL	Large Clinic
0006	3rd MED GRP-ELMENDORF	Large Hospital
0009	56th MED GRP-LUKE	Large Clinic
0010	355th MED GRP-DAVIS MONTHAN	Large Clinic
0013	314th MED GRP-LITTLE ROCK	Small Clinic
0014	60th MED GRP-TRAVIS	Medical Center
0015	9th MED GRP-BEALE	Small Clinic
0018	30th MED GRP-VANDENBERG	Small Clinic
0019	95th MED GRP-EDWARDS	Small Clinic
0033	10th MED GROUP-USAF ACADEMY CO	Large Clinic
0036	436th MED GRP-DOVER	Small Clinic
0042	96th MED GRP-EGLIN	Large Hospital
0043	325th MED GRP-TYNDALL	Small Clinic
0045	6th MED GRP-MACDILL	Large Clinic
0046	45th MED GRP-PATRICK	Small Clinic
0050	23rd MED GRP-MOODY	Small Clinic
0051	78th MED GRP-ROBINS	Large Clinic
0053	366th MED GRP-MOUNTAIN HOME	Small Hospital
0055	375th MED GRP-SCOTT	Large Clinic
0059	22nd MED GRP-MCCONNELL	Small Clinic
0062	2nd MED GRP-BARKSDALE	Large Clinic
0066	79th MED GRP-ANDREWS	Small Hospital
0073	81st MED GRP-KEESLER	Medical Center



Executive Summary

Six Sigma MEPRS Management and Control Metrics

FY 09/FY 10 S2M3

Standardized Executive Summary by Peer Group*

DMIS ID	MTF Name	Rx Dispensing Costs	Available FTE per Daily Occupied Bed	Ratio of Support Personnel to Provider FTEs	Rx Workload per Rx FTE	Lab Workload per Lab FTE	Rad Workload per Rad FTE	Inpatient Costs per RWP	Ambulatory Costs per APG	Standardized Average
Medical Centers										
0089	WOMACK AMC-FT. BRAGG	1.27	0.08	3.00	0.56	0.93	0.32	0.99	1.10	1.03
0052	TRIPLER AMC-FT. SHAFTER	0.80	0.81	0.04	1.52	0.84	1.41	0.16	1.18	0.84
0047	EISENHOWER AMC-FT. GORDON	0.25	1.11	0.51	-0.22	0.47	1.52	-0.17	1.21	0.58
0029	NMC SAN DIEGO	0.65	1.83	-0.12	0.16	0.76	-0.38	1.01	0.31	0.53
0125	MADIGAN AMC-FT. LEWIS	-0.65	0.31	0.67	-0.68	0.73	2.04	1.14	0.60	0.52
0108	WILLIAM BEAUMONT AMC-FT. BLISS	0.51	-0.18	-0.43	0.29	1.15	-0.60	0.41	0.31	0.18
0109	BROOKE AMC-FT. SAM HOUSTON	0.60	-0.85	0.07	2.17	0.07	-0.53	-0.33	-0.05	0.14
0124	NMC PORTSMOUTH	0.20	0.69	-0.82	-0.60	-0.41	-0.58	0.90	1.06	0.05
0117	59th MED WING-LACKLAND	0.15	-0.67	-0.73	0.77	0.54	0.25	0.09	-0.15	0.03
0067	NNMC BETHESDA	-0.38	0.61	0.00	-0.27	-0.41	-0.01	-1.83	-0.62	-0.36
0095	74th MED GRP-WRIGHT-PATTERSON	0.97	-0.40	-1.14	-0.36	-1.58	-0.38	1.10	-1.15	-0.37
0037	WALTER REED AMC-WASHINGTON DC	-1.72	-0.79	0.01	-1.21	0.24	-1.19	-1.14	-1.94	-0.97
0073	81st MED GRP-KEESLER	-0.45	-2.17	-0.42	-1.35	-1.45	-0.98	-1.03	-0.87	-1.09
0014	60th MED GRP-TRAVIS	-2.21	-0.38	-0.64	-0.78	-1.87	-0.87	-1.29	-1.00	-1.13

*Note:

The S2M3 Executive Summary has been standardized to reflect uniform positive/negative Z-score values across all metrics, thus positive Z-scores indicate more desirable values and negative Z-scores are less desirable values. For example, in the Pharmacy Dispensing Cost metric a negative Z-score denotes a dispensing cost that falls below the peer group average. Since in that case a negative Z-score is more desirable than a positive value, the Z-score sign reflected in the S2M3 Executive Summary has been changed to positive. The Z-score signs have been reversed for the following metrics in this Executive Summary:

- Rx Dispensing Costs
- Available FTE per Daily Occupied Day
- Inpatient Costs per RWP
- Ambulatory Costs per APG



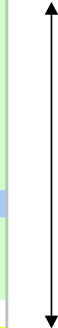


S2M3 Metrics

FY09/FY10 Cost of Pharmacy Dispensing: Medical Centers

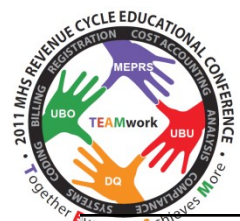
FY09/FY10 Cost of Pharmacy Dispensing: Medical Centers						FY09/FY10 Cost of Pharmacy Dispensing Summary Statistics			
Parent DMIS ID	Parent DMIS ID Name	RawWork	Rx \$ Less Supply Cost	DispCost per Script	Z Score	Statistic	RawWork	Rx \$ Less Supply Cost	Dispensing Cost per Script
0089	WOMACK A MC-FT. BRAGG	1,326,714	\$ 5,682,528	\$ 4.28	-1.27	Mean:	828,689	\$ 7,083,516	\$ 9.38
0095	74th MED GRP-WRIGHT-PATTERSON	926,807	\$ 5,073,644	\$ 5.47	-0.97	Median:	716,252	\$ 6,280,798	\$ 8.48
0052	TRIPLER A MC-FT SHAFTER	647,701	\$ 3,996,005	\$ 6.17	-0.80	St. Dev:	350,565	\$ 2,589,166	\$ 4.01
0029	NMC SAN DIEGO	1,623,680	\$ 10,996,188	\$ 6.77	-0.65				
0109	BROOKE A MC-FT. SAM HOUSTON	738,421	\$ 5,141,852	\$ 6.96	-0.60				
0108	WILLIAM BEAUMONT A MC-FT. BLISS	590,954	\$ 4,334,527	\$ 7.33	-0.51				
0047	EISENHOWER A MC-FT. GORDON	773,918	\$ 6,474,639	\$ 8.37	-0.25				
0124	NMC PORTSMOUTH	1,239,139	\$ 10,639,005	\$ 8.59	-0.20				
0117	59th MED WING-LACKLAND	694,083	\$ 6,086,958	\$ 8.77	-0.15				
0067	NNMC BETHESDA	446,444	\$ 4,865,054	\$ 10.90	0.38				
0073	81st MED GRP-KEESLER	607,397	\$ 6,787,838	\$ 11.18	0.45				
0125	MADIGAN A MC-FT. LEWIS	964,417	\$ 11,547,427	\$ 11.97	0.65				
0037	WALTER REED A MC-WASHINGTON DC	563,830	\$ 9,182,098	\$ 16.29	1.72				
0014	60th MED GRP-TRAVIS	458,135	\$ 8,361,466	\$ 18.25	2.21				

Better



Worse

Value nearest peer group mean
MTFs within 1 Std. Deviation from the peer group mean
2 Std. Deviations above/below the peer group mean
3 Std. Deviations above/below the peer group mean



S2M3 Metrics

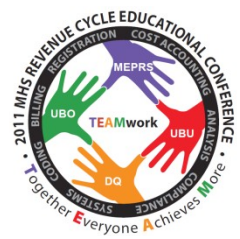
FY09/FY10 Rx Weighted Procedures per Pharmacy FTE: Large Clinics

						FY09/FY10 Scripts per FTE Summary Statistics			
Parent DMIS ID	Parent DMIS ID Name	Avg Monthly Avail FTE	Rx Weighted Procedures	Weighted Procs per FTE	Z Score	Statistic	Avg Monthly Avail FTE	Rx Weighted Procedures	Weighted Procs per FTE
0008	RW BLISS AHC-FT. HUACHUCA	19	133,415	7,116.09	-2.26	Mean:	23	307,446	13,750.36
0252	21st MED GRP-PETERSON	30	277,994	9,218.08	-1.54	Median:	21	294,643	14,163.62
0068	NHC PATUXENT RIVER	10	100,425	10,185.13	-1.21	St. Dev:	9	132,136	2,936.50
0103	NH CHARLESTON	23	241,228	10,343.14	-1.16				
0100	NAVAL HLTH CLINIC NEW ENGLAND	42	440,621	10,460.25	-1.12				
0113	82nd MED GRP-SHEPPARD	19	199,980	10,695.53	-1.04				
0062	2nd MED GRP-BARKSDALE	22	243,734	11,005.04	-0.93				
0010	355th MED GRP-DAVIS MONTHAN	27	295,984	11,117.82	-0.90				
0033	10th MED GROUP-USA F ACADEMY CO	34	386,544	11,453.43	-0.78				
0385	NHC QUANTICO	14	161,755	11,564.96	-0.74				
0051	78th MED GRP-ROBINS	22	253,569	11,787.07	-0.67				
0045	6th MED GRP-MACDILL	46	563,693	12,344.09	-0.48				
0306	NHC ANNA POLIS	10	132,588	13,261.01	-0.17				
0055	375th MED GRP-SCOTT	27	364,566	13,407.25	-0.12				
0078	55th MED GRP-OFFUTT	25	341,251	13,522.49	-0.08				
0069	KIMBROUGH A MB CARCEN-FT MEADE	42	585,333	14,077.56	0.11				
0118	NH CORPUS CHRISTI	25	349,153	14,249.67	0.17				
0119	75th MED GRP-HILL	20	282,736	14,431.46	0.23				
0009	56th MED GRP-LUKE	26	374,685	14,487.10	0.25				
7139	16th MED GRP-HURLBURT FIELD	11	167,406	14,922.56	0.40				
0326	305th MED GRP-MCGUIRE	12	173,893	15,090.51	0.46				
0122	KENNER AHC-FT. LEE	21	332,447	15,514.38	0.60				
0280	NHC HAWAII	17	270,371	15,786.53	0.69				
0121	MCDONALD AHC-FT. EUSTIS	25	393,678	15,973.39	0.76				
0058	MUNSON AHC-FT. LEAVENWORTH	13	209,696	16,017.52	0.77				
0092	NH CHERRY POINT	16	265,188	16,379.73	0.90				
0366	12th MED GRP-RANDOLPH	18	293,303	16,386.38	0.90				
0096	72nd MED GRP-TINKER	21	352,461	16,495.83	0.93				
0004	42ND MEDICAL GROUP-MAXWELL	20	337,256	17,213.53	1.18				
0056	NHC GREAT LAKES	40	698,465	17,554.90	1.30				
0330	GUTHRIE AHC-FT. DRUM	17	303,311	17,710.71	1.35				
0003	LYSTER AHC-FT. RUCKER	15	311,538	20,238.51	2.21				

Worse

Better

Value nearest peer group mean
 MTFs within 1 Std. Deviation from the peer group mean
 2 Std. Deviations above/below the peer group mean
 3 Std. Deviations above/below the peer group mean

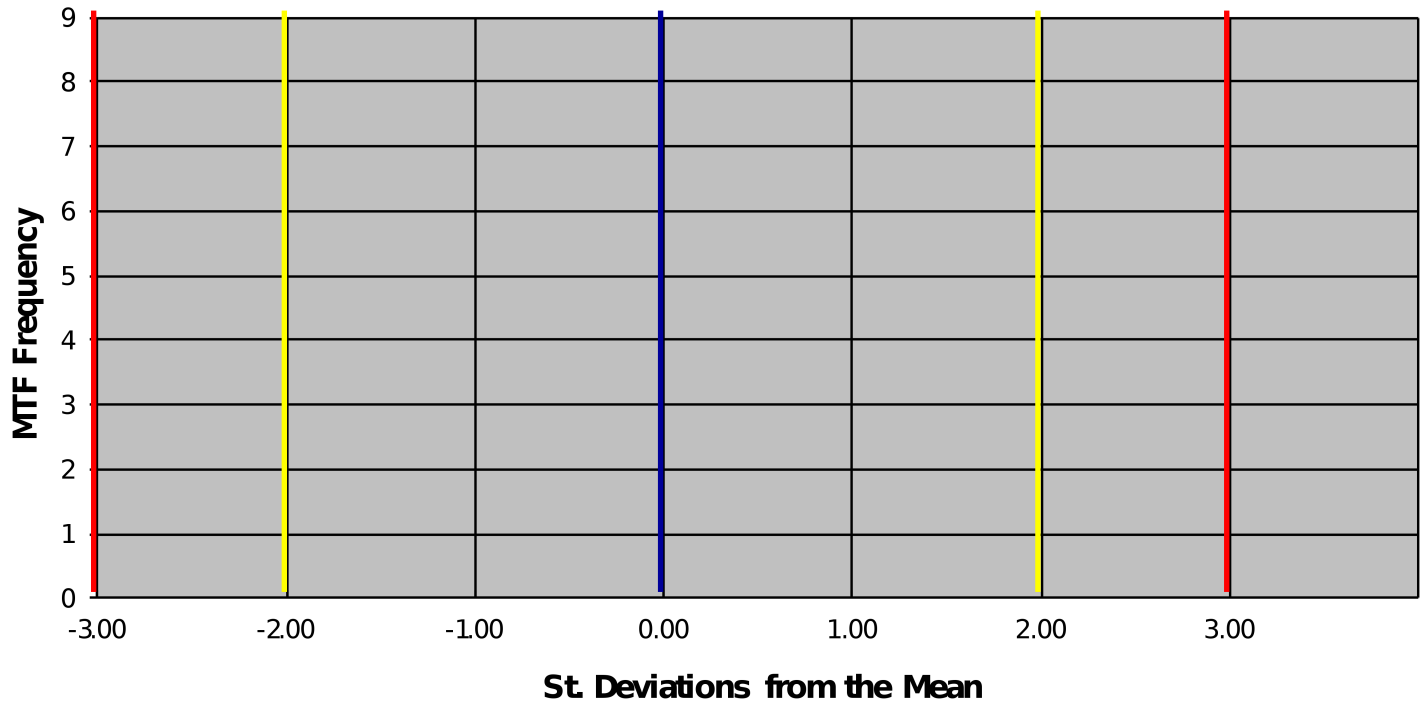


S2M3 Graphs

FY09/FY10 Cost of Pharmacy Dispensing: Medical Centers

Peer Group Graphs

- Lines Represent +/- 3 Standard Deviations from the peer group mean
- Lines Represent +/- 2 Standard Deviations from the peer group mean
- Peer group mean





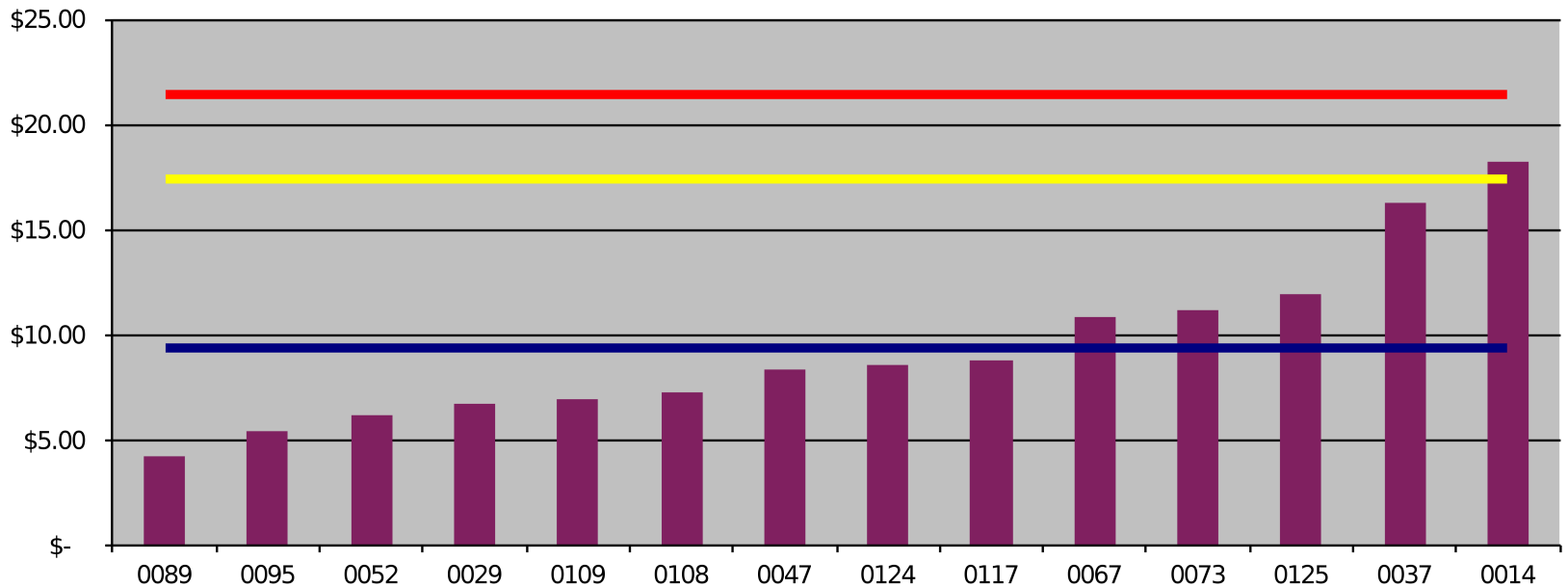
S2M3 Graphs

FY09/FY10 Cost of Pharmacy Dispensing: Medical Centers

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- Peer group mean

Dispensing Cost per Script



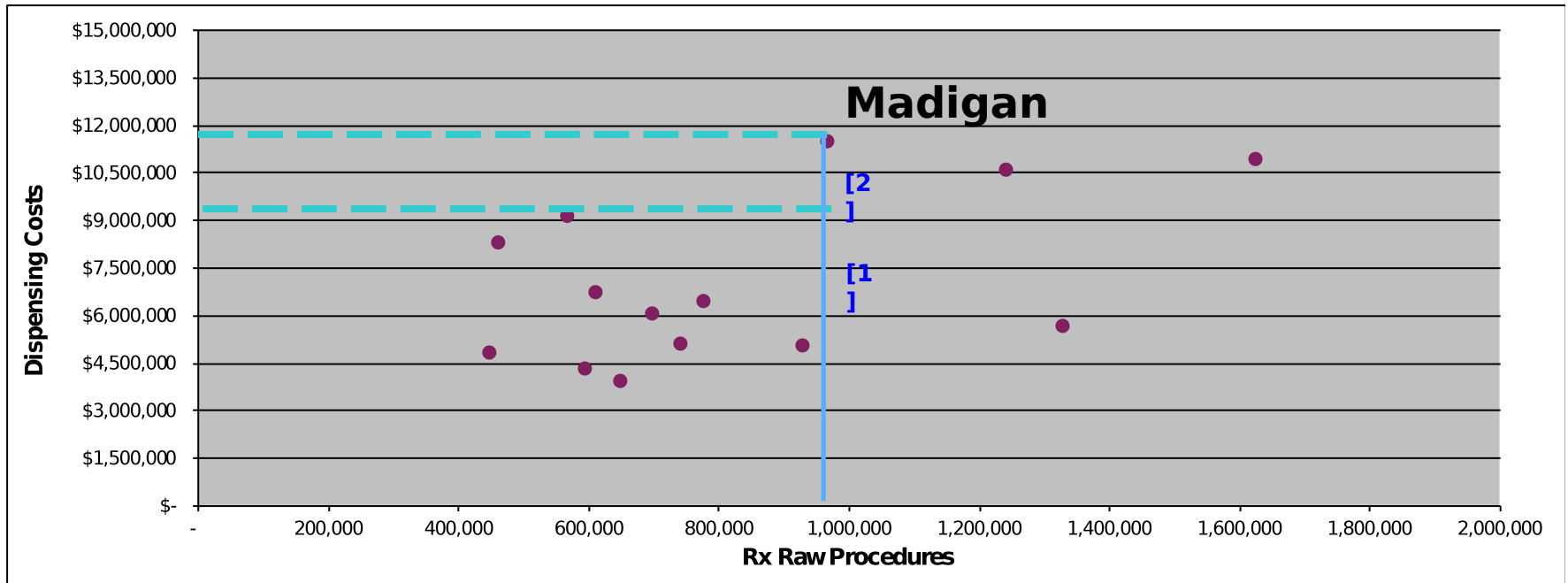


S2M3 Graphs

FY09/FY10 Cost of Pharmacy Dispensing: Medical Centers

Peer Group Graphs

	Lines Represent +/- 3 Standard Deviations from the peer group mean
	Lines Represent +/- 2 Standard Deviations from the peer group mean
	Peer group mean



For a little over 950,000 scripts, we would expect the expenses to be around \$9,000,000 [1] but at Madigan for the same number of scripts, the expenses are around \$11,500,000 [2].



General Conclusions

- OCONUS is more expensive than CONUS
- Facilities with a military mix are more expensive than those with contract or civilian personnel
- Hospitals or clinics with greater volume of workload fare better
- Inappropriate cost allocation drives cost results
- Non-reporting of borrowed labor drives results



Analysis

FY09/FY10 Rx Weighted Procedures per Pharmacy FTE: Medical Centers

						FY09/FY10 Scripts per FTE Summary Statistics			
Parent DMIS ID	Parent DMIS ID Name	Avg Monthly Avail FTE	Rx Weighted Procedures	Weighted Procs per FTE	Z Score	Statistic	Avg Monthly Avail FTE	Rx Weighted Procedures	Weighted Procs per FTE
0073	81st MED GRP-KEESLER	76	709,288	9,328.64	-1.35	Mean:	104	1,718,989	16,614.05
0037	WALTER REED AMC-WASHINGTON DC	129	1,305,661	10,102.80	-1.21	Median:	92	1,460,421	15,294.91
0014	60th MED GRP-TRAVIS	75	927,478	12,418.81	-0.78	St. Dev:	33	722,403	5,379.27
0125	MADIGAN AMC-FT. LEWIS	118	1,524,169	12,961.27	-0.68	Value nearest peer group mean			
0124	NMC PORTSMOUTH	184	2,468,133	13,412.68	-0.60	MTFs within 1 Std. Deviation from the peer group mean			
0095	74th MED GRP-WRIGHT-PATTERSON	65	959,676	14,688.73	-0.36	2 Std. Deviations above/below the peer group mean			
0067	NNMC BETHESDA	88	1,335,672	15,174.36	-0.27	3 Std. Deviations above/below the peer group mean			
0047	EISENHOWER AMC-FT. GORDON	89	1,377,089	15,415.47	-0.22				
0029	NMC SAN DIEGO	151	2,640,311	17,454.20	0.16				
0108	WILLIAM BEAUMONT AMC-FT. BLISS	77	1,396,672	18,177.74	0.29				
0089	WOMACK AMC-FT. BRAGG	95	1,867,351	19,616.57	0.56				
0117	59th MED WING-LACKLAND	104	2,159,695	20,782.45	0.77				
0052	TRIPLER AMC-FT SHAFTER	90	2,225,822	24,793.34	1.52				
0109	BROOKE AMC-FT. SAM HOUSTON	112	3,168,831	28,269.58	2.17				

Worse

Better

There are basically two values in play for each metric that requires analysis. In this case, they are Available FTEs and Pharmacy Weighted Procedures



Available FTEs

Skill Type	Available FTEs		
	Eisenhower	BAMC	MAMC
Pharmacists/ Direct Care Professionals	33.23	40.72	41.55
Registered Nurses	0.94	0.02	
Technicians/ Direct Care Para-professionals	53.11	65.99	69.28
Administrative	2.05	5.37	6.77
Grand Total	89.33	112.09	117.59



Pharmacy Weighted Workload (aka Scripts)

FCC3	FCC3 Description	Rx Weighted Workload		
		Eisenhower	BAMC	MAMC
ABA	INPT GENERAL SURGERY	36,463	684,183	64,305
ABM	INPT BURN UNIT		459,494	
BGA	OUTPT FAMILY MEDICINE CLINIC	205,761	281,180	337,891
FCC	SUPPORT TO NON-FEDERAL EXTERNAL PROVIDERS	287,553	279,375	181,155
AAA	INPT INTERNAL MEDICINE	45,350	179,923	99,537
ABB	INPT CARDIOVASCULAR AND THORACIC SURGERY	42,715	169,732	4,723
BAA	OUTPT INTERNAL MEDICINE CLINIC	119,278	151,981	261,991
AAB	INPT CARDIOLOGY	12,472	126,360	10,144
BHA	OUTPT PRIMARY CARE CLINICS	263,348	588	55,514
	
Grand Total		1,377,089	3,168,831	1,524,088



Microsoft Excel
Worksheet



Pharmacy Raw Workload

FCC3	FCC3 Description	Rx Weighted Workload		
		Eisenhower	BAMC	MAMC
ABA	INPT GENERAL SURGERY	69,455	571,159	61,218
ABM	INPT BURN UNIT		376,145	
BGA	OUTPT FAMILY MEDICINE CLINIC	205,450	279,417	337,802
FCC	SUPPORT TO NON-FEDERAL EXTERNAL PROVIDERS	287,534	279,226	181,070
AAA	INPT INTERNAL MEDICINE	130,728	269,128	133,800
BAA	OUTPT INTERNAL MEDICINE CLINIC	118,812	150,757	261,888
AEA	INPT ORTHOPEDICS	52,288	146,716	9,284
AAB	INPT CARDIOLOGY	28,190	135,407	14,778
BHA	OUTPT PRIMARY CARE CLINICS	263,413	588	55,514
	
Grand Total		1,796,988	2,996,388	1,574,848



Summary

- Six Sigma is a quality process
- Six Sigma MEPRS Management Metrics is a tool that can be used to identify areas where a Six Sigma process improvement plan can be implemented
- The Executive Summary is a good place to begin the exploration
- There are basically two components to each metric. Look at the components separately to determine where the issue may lie
- Use data sources like the EAS IV Repository, MEWACS, and CCR to isolate issues



Q&A

Questions?